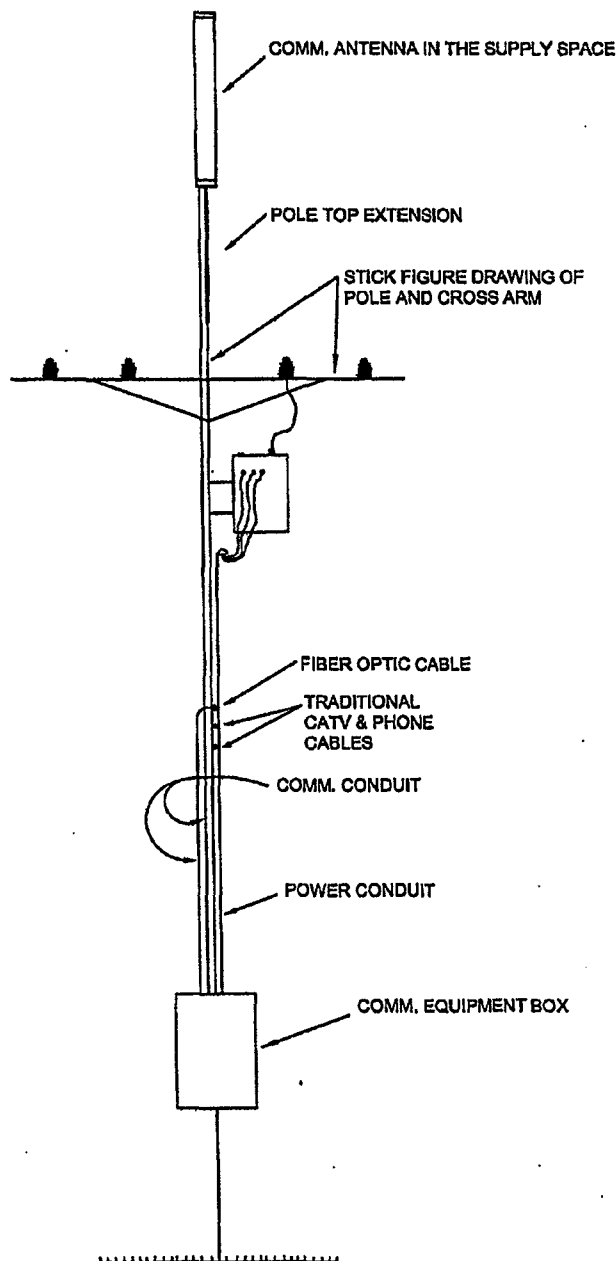


Exhibit A

POLE LOADING ASSUMPTIONS:

1. 45' CLASS 4 WOOD POLE BURIED 6.5' DEEP.
2. 336 ACSR CONDUCTOR WITH FULL NEUTRAL POSITIONED ON THE CROSS ARM.
3. 275' SPAN ON EACH SIDE OF THE POLE.
4. 57" HIGH, 8.25" DIAMETER ANTENNA WEIGHING 20 LBS.
5. 1-15 KVA TRANSFORMER ON THE POLE.
6. 1-288 COUNT FIBER OPTIC CABLE LASHED TO A 1/4" EHS MESSENGER (275' SPAN).
7. 1-.750 COAX CABLE TV CABLE LASHED TO A 5/16" EHS MESSENGER (275' SPAN)
8. 1-200 PAIR TELEPHONE CABLE LASHED TO A 5/16" EHS MESSENGER (275' SPAN)
9. TANGENT POLE (NO LINE ANGLE).
10. COMM. EQUIPMENT BOX SIZE: 48"H X 24"W X 12" D. WEIGHT: 250 LBS. LOCATION: CENTERED 10' ABOVE GROUND.
11. ASSUME EXISTING POLE (PRIOR TO ANTENNA MOUNTING) WAS FRAMED USING RUS "C1" POLE TOP FRAMING.
12. ASSUME THE SAME POLE WAS MODIFIED TO RUS "C9-1" POLE TOP FRAMING AND A 48" POLE TOP EXTENSION WAS ADDED TO THE POLE.
13. ASSUME NESC CLEARANCE ISSUES HAVE BEEN ADDRESSED AND MET (NESC RULES 232, 235C, 235I, 238, 239H, ETC.).
14. ASSUME NESC WORK RULES HAVE BEEN ADDRESSED AND MET (NESC RULES 420Q, ETC.).
15. ASSUME NESC GROUNDING RULES HAVE BEEN ADDRESSED AND MET (NESC SECTION 09).
16. ASSUME POLE TOP EXTENSION, ANTENNA, AND COMM. EQUIPMENT BOX MOUNTING HARDWARE ARE OF ADEQUATE STRENGTH.
17. ASSUME NESC GRADE "C" LOAD AND STRENGTH FACTORS, ASSUME NESC "MEDIUM" LOADING ZONE.
18. ASSUMPTIONS MUST BE MODIFIED TO REFLECT ACTUAL CONDITIONS WHEN CALCULATING ACTUAL INSTALLATIONS.



**"TYPICAL" 45' POLE WITH ANTENNA
MOUNTED ON POLE TOP
(Not to Scale)**



Marne and Associates, Inc.
Experts in Electrical Code

Eng/Dwn: DJM/CCM
Scale: NOT TO SCALE
Date: 3-21-07
Plot: 3-21-07
Proj. No: MA-0015

**NEXTG NETWORKS
POLE TOP ANTENNA REVIEW**

File Name: ANTENNA REVIEW
p61a1g

Sheet 1 of 4

Drawing 1

45-4 Wood Pole with antenna

Load calculations per RUS Distribution Design Guides (Bulletins 1724E-150 through 154)
 RUS "C9" Pole-top framing (all four wires on crossarm)
 Antenna added on a four-foot pole extension with same diameter as top of pole
 NESC Medium Loading District, Grade C

(a) Total ground line moment, including NESC load factors

(1) Pole circumference at ground line

$$C_g = \frac{(L_p - L_g)(C_b - C_t)}{L_p - L_b} + C_t$$

Cg	38.28 in	pole circumference at ground line
Lp	45.0 ft	length of pole
Lg	6.5 ft	distance from pole bottom to groundline
Lb	6.0 ft	distance from pole bottom to classification point (6 ft per ANSI O5.1)
Cb	38.50 in	pole circumference at classification point (Lb)
Ct	21.00 in	pole circumference at pole top

(2) Moment due to wind on pole

$$M_{wp} = F_{ow} W_p \left(\frac{2C_t + C_g}{72\pi} \right) H_p^2$$

Mwp	3682 ft-lb	moment due to wind on pole
Fow	1.75	NESC load factor for wind loads (Grade C, not at crossing)
Wp	4.00 lb/ft ²	wind pressure
Ct	21.00 in	pole circumference at pole top
Cg	38.28 in	pole circumference at ground line
Hp	38.5 ft	height of pole top above groundline

(3) Moment due to wind on conductors (per unit length)

$$M_{wc} = F_{ow} \left(\sum W_h H_c \right)$$

(Sh)(Mwc)	53351.54 ft-lb	moment due to wind on conductor (for a 275' span length)
Mwc	194.01 ft-lb/ft	moment due to wind on conductor (per unit length)
Fow	1.75	NESC load factor for wind loads (Grade C, not at crossing)
Whp	0.3947 lb/ft	horizontal wind force on phase conductor
Hcp	37.75 ft	height of phase conductor
Wnp	0.3947 lb/ft	horizontal wind force on phase conductor
Hcp	37.75 ft	height of phase conductor
Wnp	0.3947 lb/ft	horizontal wind force on phase conductor
Hcp	37.75 ft	height of phase conductor
Wnn	0.3947 lb/ft	horizontal wind force on neutral conductor
Hcn	37.75 ft	height of neutral conductor
Wht	0.536 lb/ft	horizontal wind force on fiber-optic cables
Hct	29.67 ft	height of cable fiber-optic cables
Wht	0.521 lb/ft	horizontal wind force on cable TV cables
Hct	28.87 ft	height of cable TV cables
Whc	0.738 lb/ft	horizontal wind force on telephone cables
Hcc	27.67 ft	height of telephone cables

(4) Moment due to wind on transformer

$$M_{wt} = F_{ow} W_p A H$$

Mwt	1449.0 ft-lb	moment due to wind on transformer
Fow	1.75	NESC load factor for wind loads (Grade C, not at crossing)
Wp	4.00 lb/ft ²	wind pressure
A	6 ft ²	cross sectional area
H	34.5 ft	mounting height (center of area)

(5) Moment due to wind on antenna

$$M_{wa} = F_{ow} W_p A H$$

Mwa	777.1 ft-lb	moment due to wind on antenna
Fow	1.75	NESC load factor for wind loads (Grade C, not at crossing)
Wp	4.00 lb/ft ²	wind pressure
A	2.474 ft ²	cross sectional area
H	44.875 ft	mounting height (center of area)

(6) Moment due to wind on pole extension

$$M_{wpe} = F_{ow} W_p A H$$

Mwpe	632.2 ft-lb	moment due to wind on pole extension
Fow	1.75	NESC load factor for wind loads (Grade C, not at crossing)
Wp	4.00 lb/ft ²	wind pressure
A	2.23 ft ²	cross sectional area
H	40.5 ft	mounting height (center of area)

(7) Moment due to wind on communication equipment box

$$M_{we} = F_{ow} W_p A H$$

Mwe	580.0 ft-lb	moment due to wind on communication equipment box
Fow	1.75	NESC load factor for wind loads (Grade C, not at crossing)
Wp	4.00 lb/ft ²	wind pressure
A	8 ft ²	cross sectional area
H	10 ft	mounting height (center of area)

(8) Total ground line moment, including NESC load factors

$$M_g = 1.05(M_{wp} + S_k M_{wc} + M_{wt} + M_{wa} + M_{wpe} + M_{we})$$

Mg	63,475 ft-lb	total ground line moment, including NESC load factors
Sh	275 ft-lb	wind span

(b) Allowable resisting moment of pole, including NESC strength factors

(1) Permitted moment at ground line

$$M_r = F_b K_r C_g^3$$

Mr	75,499 ft-lb	permitted moment at ground line, including NESC strength factors
Fb	0.85	NESC strength factor
Kr	2.64E-04 ft/in	calculation constant (2.64x10 ⁻⁴ ft/in)
Fb	6000 lb/in ²	designated fiber stress
Cg	38.28 in	pole circumference at ground line

(c) Strength requirement of pole

(1) Must be able to withstand expected loads, including load and strength factors

$$M_g \leq M_r$$

Mg ≤ Mr	yes	is the pole strength sufficient to withstand the loads?
Mg	63,475 ft-lb	total ground line moment, including NESC load factors
Mr	75,499 ft-lb	permitted moment at ground line, including NESC strength factors

(d) Pole loading summary

Mwp	3,682 ft-lb	moment due to wind on pole
(Sh)(Mwc)	53,352 ft-lb	moment due to wind on conductor (for a 275' span length)
Mwt	1,449 ft-lb	moment due to wind on transformer
Mwa	777 ft-lb	moment due to wind on antenna
Mwpe	832 ft-lb	moment due to wind on pole extension
Mwe	560 ft-lb	moment due to wind on communication equipment box
Subtotal	60,452 ft-lb	
Total Mg	63,475 ft-lb	total ground line moment, including NESC load factors and RUS 1.05 equipment factor